DOCUMENT RESUME

ED 194 542 TM 800 671

AUTHOR McClendon, Patricia R.: And Others
TITLE Comparison of Performance on the Cognitive Skills Assessment Battery with First Grade Reading Achievement.
INSTITUTION Winthrop Coll., Rock Hill, S.C.
PUB DATE Jun 80
NOTE 60p.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Cutting Scores: Diagnostic Tests: *Educational Diagnosis: Grade 1: Primary Education: Racial Differences: *Reading Achievement: *Reading Readiness: School Readiness: *School Readiness Tests: *Test Validity
IDENTIFIERS *Cognitive Skills Assessment Battery: Comprehensive Tests of Basic Skills

ABSTRACT

The 1978 South Carolina Basic Skills Assessment Act mandated that a readiness test be administered to each beginning first grade student, and that the results be used to plan appropriate instruction. The Cognitive Skills Assessment Battery (CSAB) was selected for this purpose. This study was designed to determine if the CSAB provides adequate information for diagnostic/instructional decisions in first grade. All first grade students in two schools in northern South Carolina were administered the CSAB; were administered the Comprehensive Tests of Basic Skills, reading subtests; and were rated by their teachers on reading achievement. According to the findings of this study, the CSAB does not appear to provide adequate information for diagnostic/instructional decisions in first grade. Mean scores distinguished more between black and white students than between students just beginning first grade and students completing first grade, raising a question of cultural bias; the cutoff score did not adequately distinguish between "Ready" and "Not Ready" students; and items on the CSAB did not appear to be representative of necessary pre-reading skills. (Author/BW)

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COMPARISON OF PERFORMANCE ON THE COGNITIVE SKILLS ASSESSMENT BATTERY WITH FIRST GRADE READING ACHIEVEMENT

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June 1980

Winthrop College
Competency Testing Project

ACKNOWLEDGEMENTS

The authors extend their deep gratitude to Mr. T. J. Bratton, District Superintendent, and to the principals and teachers of the schools used in the study for their cooperation:
Mrs. Sonya Brown, Miss Lelar Douglas, Mr. Sol Foster, Mr. James Gordon, Mrs. Debbie Greenleaf, Mrs. Marilyn Loflin, Mrs. Claire Long, Mrs. Martha Meyer, and Mrs. Paulette Weiland.

In addition, they express appreciation to six graduate assistants for their conscientious endeavors in administering and scoring the Cognitive Skills Assessment Battery: Miss Gail B. Brown, Miss Sara R. Caldwell, Mrs. Beverly D. Harris, Mrs. Gay Laffitte, Miss Sharon Trudi Simmons, and Mrs. Elizabeth K. Vipperman.

They also wish to thank Dr. Gregg Strasler and the University of South Carolina Computer Center for assistance given in programming and processing data.

Coordinating arrangements and financial support for this study were provided by the Winthrop College Competency Testing Project, Dr. Margaret F. Hawisher, Director.

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COMPARISON OF PERFORMANCE ON THE COGNITIVE SKILLS ASSESSMENT BATTERY WITH FIRST GRADE READING ACHIEVEMENT

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Background

The 1978 South Carolina Basic Skills Assessment Act mandated that, as of Fall 1979, a readiness test be administered to each beginning first grade student. Results of the readiness test, as prescribed in the act, are to be used to plan appropriate instruction. One assumption implied in this legislation is that a readiness test measures competencies which must be mastered if a child is to be successful in the first year of formal instruction. Although action by the legislature was well-intentioned, research on readiness tests indicates that there is no instrument which permits the precision anticipated in this act.

Basic to the selection of any readiness test is the question, "Readiness for what?" Since 1930, educators have been searching for a measure of pre-reading skills (a readiness test) which would accurately predict first grade reading achievement. Even after fifty years of study, correlations between readiness tests administered in the fall, and reading achievement tests administered in the spring, range from .40 to .79. The higher correlations reported were obtained in studies in which readiness test tasks most closely resembled actual reading behavior (Kavake, 1979) in the instructional program to which students later were exposed. Unfortunately, many readiness tests include items which, according to extensive research, are not related to academic achievement in any program. Such items include: matching of geometric shapes, large muscle coordination, naming shapes, identifying colors, and similar types of items. A category common to most readiness tests is one which

measures a child's knowledge of letter names. Knowledge of letter names prior to formal instruction is usually significantly correlated to reading achievement. However, after students receive instruction in letter names, there is no significant correlation with reading achievement. Knowledge of letter names per se, does not assure success in initial reading skill development. This category, while predictive of achievement, does not provide useful diagnostic information, in that giving instruction in letter names to students deficient in this area will not increase their potential for reading success.

It is not surprising that within the literature are many caveats regarding the use of readiness tests. According to Karlin (1957), the predictive value of reading readiness tests is about four percent better than chance. Hillerich (1977) cautions that the "results of such tests should never be used to classify an individual child." (p.45) Advocating a view of readiness as a continuum rather than a point, Hillerich criticizes the use of readiness tests to determine whether or not a student is "ready." It is not unusual for students classified as "ready" to be given direct formal instruction; whereas, those designated "not ready" are assigned general readiness activities. Then, when achievement tests are administered in the spring, the phenomenon of the self-fulfilling prophecy occurs-- children who have not been instructed in reading and mathematics achieve at lower levels than do those who have received such instruction. Nowhere in the literature is there a suggestion that differentiated instruction should be avoided. However, educators are advised that instruction in specific skills should not be withheld on the basis of a readiness test score alone.

There is also little justification for planning long-range instruction on the basis of readiness test scores for three major reasons: (1) test scores obtained from young children are frequently unreliable; (2) all the important readiness factors cannot be measured by any one instrument; and (3) unless the readiness test used reflects the instructional program to which the students will be

exposed, the measure can not be considered diagnostic. For these and other reasons, readiness test results should be considered little more than clues for tentative instructional planning. How much direction is provided for instruction depends on the particular readiness test used.

The South Carolina State Department of Education selected the Boehm/Slater Cognitive Skills Assessment Battery (CSAB) as the readiness test to be administered in the first grade. Several concerns have been expressed regarding the selection of this test to meet the purposes stated in the legislation.

1. The CSAB was designed to be administered to pre-kindergarten and kindergarten children. In South Carolina, the test is administered to first grade children each year.
2. Instructions accompanying the CSAB state that, since the measure is criterion-referenced rather than norm-referenced, no total score is given. (Boehm & Slater, 1977) In South Carolina, a minimum total score (88) has been established as the basis for distinguishing between children who are "ready" and those who are "not ready" for first grade.
3. According to the Teacher's Manual, the CSAB "has content validity only for those teachers who include among their curricular goals the areas covered in the battery." (Boehm & Slater, 1977, p.15) In South Carolina, selection of the CSAB was made on the basis of KINDERGARTEN objectives for the state. Since results of the CSAB are to be used to make decisions regarding a child's potential for success in a first grade program, there is a serious question as to whether or not curricular goals for first grade programs are compatible with the areas covered in the battery. In fact, the developers of the test emphasize that the CSAB measures what is commonly taught in kindergarten, not what should be taught. Under those conditions, will results of the test provide insight as to "for what is the child ready?"

4. Boehm and Slater caution that, "For many children, performance in some areas, included on the CSAB will occur as a result of their general development rather than as the result of a specific program." (Boehm & Slater, 1977, p.8) Since the South Carolina Basic Skills Assessment Act directs that results of the readiness test be used to plan appropriate instruction, it is possible that teachers will devote extensive instructional time to areas which are affected more by maturation than instruction.

No readiness test predicts academic success in first grade (in reading, mathematics, or any other area of the curriculum) with sufficient accuracy to warrant establishing a cutoff score by which students would be designated "ready" or "not ready". Since the legislation focused on reading and arithmetic in the lower grades (reading, arithmetic and writing in the upper grades), a single readiness test would have to be fairly global in nature. The CSAB is a global readiness test for pre-kindergarten and kindergarten students. It is unlikely that the CSAB, or any other global readiness test, even if it had been designed for the methods and materials of a specific first grade program, would serve as an effective diagnostic tool for planning instruction. The prudence of ascribing to the CSAB predictive and diagnostic capabilties for which no evidence has been provided must be questioned.

Traditional procedures for determining the effectiveness of reading readiness tests involve the administration of a reading readiness test at the beginning of first grade, and a reading achievement test at the end of first grade. If the scores on the two tests are strongly correlated, the readiness test is considered an accurate predictor of reading success. This process for ascertaining predictive validity ignores the effect of instruction and other variables in the intervening period. It appears to be based on the assumption that relative standings established on readiness tests should remain unchanged by instruction.

If that premise were accepted, then readiness tests would best be used merely to categorize students, a practice not recommended. There would be no need for teachers to attempt to differentiate instruction--little or no change in relative position would occur.

However, even the most devout believer in readiness tests would not subscribe to the futility of instruction. An effective teacher provides an appropriate program of instruction which enables many students entering first grade with low reading readiness scores to become high achievers in reading. Conversely, children with high reading readiness scores, if subjected to poor instruction, may fail to achieve at even an average level. It is possible that differences in teacher competencies account for as much of the variability in the predictive value in reading readiness tests as do inherent inadequacies of the readiness instrument used to predict success.

An alternate procedure for examining the extent to which a readiness test measures variables related to reading achievement would be to administer the readiness test at the end of first grade, and to correlate readiness test scores with reading achievement scores, teacher judgement, and/or other indicators of reading achievement. Through this procedure, correlation coefficients provide a quantitative measure of concurrent validity. (Lindeman & Merenda, 1979) High correlations would support contentions that items on the readiness test represent skills prerequisite to those assessed on the reading achievement measure, since students who are successful readers would have obtained readiness test scores higher than the scores obtained by poorer readers. Low correlations on the other hand, should raise serious questions regarding the concurrent validity of the readiness test since students who are successful readers would not have obtained (consistently) higher scores than those obtained by unsuccessful readers. In the latter instance, the tasks measured on the readiness test

would appear not to be prerequisite to successful reading skill development.

In this study, the CSAB was administered in the spring (May) to first grade students who had taken the CTBS one month earlier, in April. With the two test administrations less than one month apart, it would be reasonable to assume one of two outcomes.

1. There would be no significant correlation. Since all (or most) of the students were actually reading, all (or most) would have attained competency in all of the pre-reading skills covered by the test, and would have responded correctly to the items.
2. Higher correlations would be obtained than those obtained when comparing fall readiness test scores with spring achievement test scores. Good readers would have consistently scored higher on the readiness test than would have poorer readers. Correlations would exceed .79, the highest correlation obtained in fall readiness/spring achievement testing situations.

The Study

Statement of the Problem

In view of the preceding discussion, this study was designed to answer the following question. Does the Cognitive Skills Assessment Battery (CSAB) provide adequate information for diagnostic/instructional decisions in first grade? More specifically, two major concerns which were addressed pertained to the percentage of students demonstrating mastery on the CSAB and to the relationship of the CSAB total score to indices of reading achievement (the Comprehensive Test of Basic Skills and teacher rating).

1. What percentage of students completing first grade:
   a. attain the established cutoff score of 88 on the CSAB?
   b. demonstrate mastery on each item on the CSAB?

2. Is there a relationship between total scores on the CSAB and:

   a. CTBS total reading scores?

   b. CTBS reading subtest scores?

   c. teacher ratings of reading achievement?

The study was designed to examine the concurrent rather than predictive validity of the CSAB for reading achievement at the first grade level.

Subjects

The subjects for the study were 129 first grade students attending two schools in one public school district in northern South Carolina. All first grade students attending the two selected schools were included in the study.

Instruments Used

The Cognitive Skills Assessment Battery was selected because it is the designated readiness test for the South Carolina basic skills testing program. According to the CSAB test manual, qualifications implied for administering and scoring this test are those necessary for employment as a teacher or a teacher's aide.

The CSAB must be administered individually. Administrative conditions are not standardized, the test may be given in one sitting or in two sittings. Neither are the scoring procedures standardized. Although instructions for scoring are given, for numerous items there is wide latitude for the determination of responses which will be fully accepted, partially accepted, or rejected. The authors provide no evidence concerning reliability of the CSAB, explaining that conventional methods for determining reliability are inappropriate for criterion-referenced measures. Developers of the CSAB state further that the test has content validity only to the extent that curriculum goals are encompassed within the battery.

The Comprehensive Tests of Basic Skills, Expanded Edition, Form S, Level B, was used as one of the measuring instruments in the study since the test is used in the South Carolina statewide testing program. No required qualifications for administering the test are stated in the manual. Standard rules for scoring are provided and detailed. The internal consistency of sub-tests and the total test battery is reported in the Technical Bulletin.

The Teacher Rating Scale was developed at Winthrop College. It requires that teachers rate each student in one of five categories.

5 SUPERIOR	Reads considerably better than the average first grade child.
4 ABOVE	Reads better than the average first grade child.
3 AVERAGE	Reads as well as the average first grade child.
2 BELOW AVERAGE	Has difficulty reading materials that the average first grade child could read.
1 POOR	Is a non-reader or is at a beginning reading stage.

Procedures for Gathering Data

The Cognitive Skills Assessment Battery (CSAB) was administered as an individual test within a four-day period in May (May 15-18, 1979) by a team of examiners composed of a Winthrop College graduate reading faculty member and six graduate students. Prior to the administration of the CSAB, extensive training in test administration was provided for the six graduate students by the reading faculty member. The graduate students also were given guidance and additional training sessions on accurate scoring of student responses.

During the days of testing, and for two days following, the examiners met daily to resolve problems encountered while administering and scoring the CSAB.

The Comprehensive Test of Basic Skills (CTBS) was administered as a group test in the public schools used in the study. The test, given in April 1979,

was administered by classroom teachers to whom the students were assigned.

The Teacher Rating Scale was used by the teachers of the first grade students included in the study. The reading achievement of each student was rated at the beginning of the four-day testing period for the CSAB.

Treatment of the Data

Percentages were calculated on the number of students attaining/not attaining the cutoff score of 88, and on the number of students giving incorrect/partially correct/fully correct responses to each item.

The Pearson product-moment correlation coefficient was the statistical technique used to calculate the extent of correlation between readiness test scores and reading achievement (standardized test scores and teacher ratings). Product-moment correlations were obtained through the use of the Statistical Analysis System (SAS 76). Ordinarily, it is inappropriate to assess the validity of criterion-referenced tests (such as the CSAB) by this statistical technique. Validity coefficients are affected by the variability of the group--correlation coefficients decrease as variability within a group decreases. Unlike norm-referenced tests which require variability in scores to compare performance of one individual to the performance of others, criterion-referenced tests compare the performance of the individual with specific learning tasks to be accomplished in a content domain. In criterion-referenced testing "the focus clearly is on what the person can do and what he knows, not on how he compares with others." (Anastasi, 1976, p. 97)

A decision to submit the data to analysis of product-moment coefficients of correlation was based on three considerations.

1. The developers of the CSAB stress that no total score was given since the CSAB is criterion-referenced rather than norm-referenced. Their

intent was that teachers would examine the pattern of strengths and weaknesses which would emerge for each child. The State established a total score and a cutoff score, changing the primary function of the CSAB.

2. On the preliminary results from the first statewide administration of the CSAB in Fall 1979, scores ranged from zero to 117 with a standard deviation of 14.3. Although the variability was greatly reduced among scores obtained in this study, the range (74 to 111) and standard deviation (8.7) were substantial.
3. Criterion-related validity must be considered in judging the quality of a criterion-referenced test. The criterion for validation should be some measure of educational attainment which would support the contention that students attaining "mastery" will perform at a higher level in subsequent related tasks than students failing to attain "mastery." (Lindeman & Merenda, 1979).

CSAB scores were plotted against measures of reading achievement in an expectancy table. This technique for determining test validity, though unsophisticated, is appropriate for use with criterion-referenced measures. Percentages derived through this procedure indicate "the probability that an individual who obtains a certain score on a test will attain a specified level of criterion performance." (Anastasi, 1976, p. 163)

Results and Discussion

Range and Mean Scores

The total sample of 129 included 58 girls and 71 boys. The group consisted of 72 white and 57 black students. An examination of the range of scores and mean scores given in Table 1 reveals that, for the total sample, scores on the CSAB administered at the end of first grade (May 1979) ranged from 74 to 111 with

a mean score of 93.2. The standard deviation was 8.7.

For black children, the range was from 74 to 105 with a mean of 88.4.

Scores of white children ranged from 78 to 111 with a mean score of 97.1.

The mean score for whites exceeded that of blacks by 8.7 raw score points.

Table 1

Means, Standard Deviations, and Minimum and Maximum Scores by Racial Category and Total Group for Beginning[a] and Ending[b] First Grade Students

Racial Category/ Placement	Mean	Standard Deviation	Minimum Obtained Score	Maximum Obtained Score
Total				
Beginning First	88.9	14.3	0	117
Ending First	93.2	8.7	74	111
Black				
Beginning First	83.8	14.9	5	117
Ending First	88.4	8.0	74	105
White				
Beginning First	92.9	12.5	0	117
Ending First	97.1	7.2	78	111

[a]"Beginning First Graders" refers to students who were tested early in the fall of 1979 as a part of the South Carolina Basic Skills Assessment Program.

[b]"Ending First Graders" refers to students who were tested late in the spring of 1979 as a part of this study.

The data in Table 1 also show figures obtained from the preliminary state results from the first statewide administration of the CSAB in Fall 1979. Of particular importance are the following comparisons.

1. There was only a 4.3 raw score point increase in the mean score of students in the sample who had almost completed first grade (M= 92.2) over the mean score (M= 88.9) of students statewide who were just beginning first grade.
2. The mean score of black students in the study sample group (M= 88.4) was only 4.6 raw score points higher than the mean score (M= 83.8) of black students beginning first grade in the statewide study.
3. White students at the end of first grade had a mean score (M= 97.1) only 4.2 raw score points above the mean score (M= 92.9) of white students just beginning first grade in the statewide study.
4. The maximum score (117) attained by beginning first grade students in the state study was 6 raw score points higher than the maximum score (111) attained by any student in this study. (NOTE: The maximum number of points which could have been attained on the CSAB was 117).

Number and Percentage "Ready" and "Not Ready"

The percentage of students scoring less than 88 on the CSAB and those scoring 88 or higher was calculated for the total sample, for girls and boys, and for black and white students. This information, along with similar information from the statewide study, is shown in Table 2.

Table 2
Number and Percentage of Students
"Ready"[a] and "Not Ready"[b]

Groups	"Ready"[a] (No.)	%	"Not Ready"[b] (No.)	%
Total				
Beginning First[c]	(29,188)	60.2%	(16,851)	34.7%
Ending First[d]	(96)	74.4%	(33)	25.6%
Girls				
Beginning First	(14,876)	64.3%	(7,168)	31.0%
Ending First	(44)	75.9%	(14)	24.1%
Boys				
Beginning First	(14,286)	56.4%	(9,672)	38.1%
Ending First	(52)	73.2%	(19)	26.8%
Blacks				
Beginning First	(9,398)	44.7%	(9,997)	47.5%
Ending First	(30)	52.6%	(27)	47.4%
Whites				
Beginning First	(19,492)	72.2%	(6,689)	24.8%
Ending First	(66)	91.7%	(6)	8.3%

[a]"Ready" indicates students's total score on the CSAB equalled or exceeded 88.

[b]"Not Ready" indicates student's total score on the CSAB was less than 88.

[c]"Beginning First Graders" refers to students who were tested early in the fall of 1979 as a part of the South Carolina Basic Skills Assessment Program.

[d]"Ending First Graders" refers to students who were tested late in the spring of 1979 as a part of this study.

Only partial data are provided from the statewide study. The South Carolina State Department of Education report, distributed December 20, 1979, included a column for the number and percentage of students for whom data were incomplete. Information on three ethnic groups was also provided in that report.

In this study, 74.4 percent of the students scored 88 or higher on the CSAB, 25.6 percent scored less than 88. A similar pattern occurred in the percentage of girls and boys who were "Ready", 75.9 percent and 73.2 percent respectively. Extreme differences appeared in the percentage of blacks and whites who scored 88 or higher. While 91.7 percent of the whites scored at a level to be considered "Ready," only 52.6 percent of the black students who were completing first grade attained the cutoff score.

Of the black students completing first grade, 47.4 percent failed to attain the cutoff score of 88 on the CSAB. That percentage was, for all practical purposes, identical to the percentage of black students beginning first grade (47.5 percent) who failed to attain the cutoff score.

Percentage of Responses to CSAB Items

Responses by Total Sample

To identify specific items on the CSAB which appeared to be difficult for students in this sample, the percentage of partial and complete answers to each item was obtained. A detailed table is included as Appendix A. Analysis of these percentages was complicated by the scoring process which permitted assignment of points for partial answers. Some items (such as Item 4) were either right or wrong and received one point for a correct answer. Other items (such as Item 3) were right, partially right, or wrong, and received two, one, or no

no points, depending on the response given. On Item 57, a student could obtain zero to six points according to the response given. In the following discussion, percentages given are in terms of completely correct responses.

Thirteen items were answered correctly by all students (100 percent).

Category	Item
Basic Information	5. Show me the boy/Now show me the girl
Number Knowledge	22. Tell me what number this is (Symbol 3)
Picture Comprehension	29. Point to the picture that shows what we use when it rains (umbrella) 30. Point to the picture that shows what we ride in (car)
Visual-Motor Coordination	Make one like this 45. (square) 46. (triangle)
Symbol Discrimination	Show me another one like this 58. (leaf) 59. (circle in square) 60. (hand) 61. (symbol "A")
Letter Naming	66. What Letter is this (B)
Visual-Auditory Discrimination (Initial)	69. Show me the sun (pictures of girl, sun, gun)
(medial)	71. Show me the house (pictures of horse, house, hose)

Twenty-four items were answered correctly by 90.0 percent to 99.9 percent of the total group. When these items were combined with the previous thirteen, there were five categories in which each item was responded to correctly by 90.0 percent to 100 percent of the sample group.

Identification of Body Parts

Color Identification

Picture Comprehension

Visual-Motor Coordination

Letter Naming

There were three additional categories in which more than seventy percent of the students answered each item correctly.

Visual-Auditory Discrimination

Multiple Directions

Symbol Discrimination

In five categories, at least half of the items were answered correctly by less than fifty percent of the students who had almost completed first grade.

Basic Information

Information from Pictures

Auditory Memory (only one item was in this category)

Vocabulary

Visual Memory (only one item was in this category)

Including items in other categories, there were a total of eleven items to which less than fifty percent of the students in this sample were able to give a completely correct answer.

Category and Item	Percent Giving Completely Correct Answers
Basic Information	
2. Give address	23%
3. Give birthdate	47%
Information from Pictures	
25. Boy sitting and holding a ball	11%
26. Girl painting a picture	15%
Auditory Memory	
43. Tell me the words (delayed recall)	20%

Category and Item	Percent Giving Completely Correct Answers
Vocabulary	
52. Rain	36%
53. Elbow	20%
54. Whisper	48%
55. Chase	24%
46. Injure	16%
Visual Memory	
57. (Remember 6 pictured items)	0%

Responses by Sex

Most of the items were answered correctly by a larger percentage of girls than boys. For nine of the items, the percentage of girls responding correctly exceeded the percentage of boys by ten to twenty percent.

	Item	Difference in Favor of Girls
4.	Give telephone number	20%
21.	How many flowers (8)	11%
28.	Describe picture (children playing with blocks)	18%
38.	Point to tall and red flowers	10%
42.	Skip	14%
50.	Tell me what I said (delayed recall)	17%
52.	What does rain mean	20%
55.	What does chase mean	16%
76.	Do these sound just alike: Kart-Karp	13%

Ten to twenty-one percent more boys than girls responded correctly to three items.

	Item	Difference in Favor of Boys
13.	What is this shape called (square)	18%
23.	How many apples do you see all together (9)	10%
36.	What did Joe give the kitten	21%

Responses by Race

Correct responses by white students exceeded correct responses by black students (by ten to thirty-nine percent) on twenty-eight items.

Category and Item	Difference in Favor of Whites
Basic Information	
2. Give address	24%
4. Give telephone number	13%
Shape Identification	
What is this shape called	
12. circle	19%
13. square	13%
Number Knowledge	
How many do you see	
18. 3 blocks	16%
20. 6 balloons	32%
21. 8 flowers	18%
23. 9 apples	17%
Information from Pictures	
25. What is this boy doing	10%
What is happening in this picture	
27. boy pushing girl in swing	21%
28. children playing with blocks	18%
Picture Comprehension	
31. Show what we use to hold things together	11%
Story Comprehension	
Point to the picture that shows	
33. What Jean put on last	19%
34. What Jean did not wear	14%
36. Tell me what Joe gave the kitten	22%
Multiple Directions	
39. Show me the dog in the box and the doll in the chair	11%
Auditory Memory	
43. Tell me the words (delayed recall)	24%
Sentence Recall	
50. Tell me what I said (delayed recall)	26%

Category and Item	Difference in Favor of Whites
Vocabulary	
51. apple	11%
52. rain	26%
53. elbow	24%
54. whisper	39%
55. chase	18%
56. injure	24%
Visual-Auditory Discrimination	
70. Show me the lamp pictures of lamb, lock, lamp (final sound)	18%
Auditory Discrimination	
Do these sound just alike	
73. hand-sand	14%
75. pet-pit	20%
76. kart-karp	26%

Only about one-half of the items on the CSAB (37 of 76) were answered correctly by at least ninety percent of the students in this sample. Eleven of the items (approximately one-seventh) were answered correctly by less than fifty percent of the sample students. Since these students were completing first grade, there were two possible explanations for this low record of accuracy. Either the students were poor readers (or non-readers), or the CSAB did not have a very close relationship to reading achievement. The large number of items (28) to which ten to thirty-nine percent more white than black students responded correctly raised questions which could not be answered until data were obtained on the validity of the CSAB.

Expectancy Distributions

Bivariate distributions of predictor scores (CSAB) were plotted against status on reading achievement criterion (CTBS Total Reading and Teacher Rating). The resulting expectancy tables and charts permitted examination of the relationship between skills measured by the CSAB and actual reading achievement.

CTBS Total Reading Scores As the Criterion

To determine how well the CSAB cutoff score of 88 agreed with results obtained from CTBS Total Reading, data were plotted on a twofold chart containing each student's standing on both the CSAB and CTBS. The results presented in Table 3 depict the reading achievement of students scoring at or above the cutoff score of 88, and those scoring 87 or below. The first row of the table shows that, of the ninety-six students scoring 88 or above ("Ready") on the CSAB, 21 percent (20 students) obtained a score on the CTBS Total Reading which was three standard deviations below the mean, and 19 percent (18 students) scored two standard deviations below the mean on the CTBS. When the two cells are combined, thirty-eight of the students (40 percent) attaining or surpassing the cutoff score on the CSAB scored below average in reading on the CTBS. The reading achievement standings of the thirty-three students scoring 87 or below on the CSAB ("Not Ready") are shown in the second row. Thirty percent (10 students) of those "Not Ready" scored three standard deviations below the mean on the CTBS, and 39 percent (13 students) fell two standard deviations below the mean. Those two cells combined have a total of 23 students (69 percent) scoring "Not Ready" on the CSAB and below average in reading on the CTBS. It also should be noted that 30 percent of the students categorized as "Not Ready" on the CSAB scored average or above on the CTBS. Although a larger percentage of students scoring "Not Ready" on the CSAB scored below average in reading than did students scoring "Ready," the data suggest the designated cutoff score was inappropriate for this sample.

Using the mean and standard deviation of CSAB scores for the sample, a second expectancy table was prepared (Table 4).

Table 3

Relation between "Ready/Not Ready" Scores on CSAB and Standing on CTBS Total Reading

CSAB Score	Number of Cases	Percentage Scoring Within Each SD on CTBS Total Reading				
		-3 SD	-2 SD	±1 SD	+2 SD	+3 SD
"Ready" 88 and Above	96	(N= 20) 21%	(N= 18) 19%	(N= 37) 39%	(N= 21) 22%	- -
"Not Ready 87 and Below	33	(N= 10) 30%	(N= 13) 39%	(N= 9) 27%	(N= 1) 3%	- -

Table 4

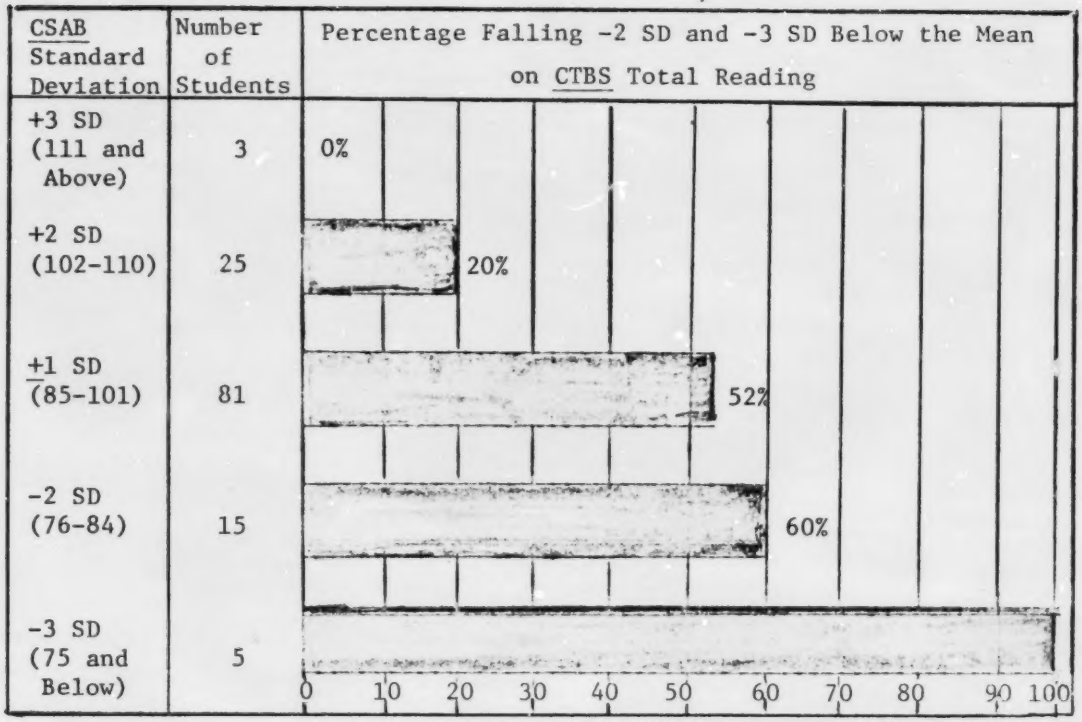
Relation between Performance on CSAB and Standing on CTBS Total Reading

CSAB Score	Number of Cases	Percentage Scoring Within Each SD on CTBS Total Reading				
		-3 SD	-2 SD	±1 SD	+2 SD	+3 SD
(+3 SD) 111 and Above	3	- -	- -	- -	(N= 3) 100%	- -
(+2 SD) 102-110	25	(N= 5) 20%	- -	(N= 8) 32%	(N= 12) 48%	- -
(+1 SD) 85-101	81	(N= 20) 25%	(N= 22) 27%	(N= 32) 40%	(N= 7) 9%	- -
(-2 SD) 76-84	15	(N= 4) 27%	(N= 5) 33%	(N= 6) 40%	- -	- -
(-3 SD) 75 and Below	5	(N= 1) 20%	(N= 4) 80%	- -	- -	- -

For this analysis, attention was directed toward the probility of different criterion outcomes for students who fell within each standard deviation on the CSAB. The first column in Table 4 shows the range of scores in each CSAB standard deviation. When a score of 102 to 110 (+2 SD) was attained, the probability that a student's reading achievement would be average or above was 80 out of 100. The probability of average or above reading achievement was 49 out 100 for students scoring 85 to 101 (±1 SD) on the CSAB. All students scoring 111 and above (+3 SD) on the CSAB scored above average on the CTBS. No student scoring 75 or below (-3 SD) on the CSAB scored average or above on the CTBS.

A more graphic presentation of the data is provided in Figure 1 which shows the probability of reading "success" or "failure" corresponding to each CSAB standard deviation interval. If the purpose of a cutoff score on the CSAB is to identify students for whom formal reading instruction should be delayed in favor of extended "readiness" activities, a score of 75 (for this sample) would decrease the probability that reading instruction would be delayed for students who could have been successful in reading without the delay. If, on the other hand, the CSAB cutoff score is used to screen students for further diagnosis, a score of 102 would decrease the probability that students needing pre-reading skill development would be overlooked. Between the extremes of +3 SD and -3 SD, the percentage of "failures" in each interval increased irregularly. A student scoring within +2 SD of the mean on the CSAB has a 20:80 or 1:4 chance of achieving at a below average level in reading. Conversely, a student scoring within -2 SD of the mean on the CSAB has a 40:60 or 2:3 chance of achieving at an average or above level in reading.

Relation between Performance on CSAB and
Below Average Scores on CTBS Total Reading



Teacher Rating of Reading Achievement As the Criterion

Since there are discrepancies between standardized reading test scores and actual reading performance of children, teacher rating (a second criterion of reading achievement) also was plotted on expectancy tables. These results appear in Tables 5 and 6.

With teacher rating as the criterion for reading achievement, the cutoff score of 88 on the CSAB still appears to have been inappropriate for this sample (Table 5). Thirty-six percent of the students scoring 88 or above on the CSAB were considered to be "Poor" or "Below Average" readers. Of the students scoring 87 or below on the CSAB, 76 percent were rated "Poor" or "Below Average" by their teachers, while 24 percent were rated "Average" or "Above Average" in reading achievement.

Table 5

Relation between "Ready/Not Ready" Scores on CSAB and Teacher Rating of Reading Achievement

CSAB Score	Number of Cases	Teacher Rating of Reading Achievement				
		Poor	Below Av	Average	Above Av	High
"Ready" 88 and Above	96	(N= 15) 16%	(N= 19) 20%	(N= 41) 43%	(N= 17) 18%	(N=4) 4%
"Not Ready 87 and Below	33	(N= 17) 52%	(N= 8) 24%	(N= 7) 21%	(N= 1) 3%	- -

Table 6

Relation between Performance on CSAB and Teacher Rating of Reading Achievement

CSAB Score	Number of Cases	Teacher Rating of Reading Achievement				
		Poor	Below Av	Average	Above Av	High
(+3 SD) 111 and Above	3	- -	- -	- -	(N= 2) 67%	(N=1) 33%
(+2 SD) 102-110	25	- -	(N= 1) 4%	(N= 12) 48%	(N= 9) 36%	(N= 3) 12%
(+1 SD) 85-101	81	(N= 21) 26%	(N= 21) 26%	(N= 32) 40%	(N= 7) 9%	- -
(-2 SD) 76-84	15	(N= 7) 47%	(N= 5) 33%	(N= 3) 20%	- -	- -
(-3 SD) 75 and Below	5	(N= 4) 80%	- -	(N= 1) 20%	- -	- -

Data in Table 6 show that, as when CTBS scores were the criterion, all students scoring 111 or above (+3 SD) on the CSAB were above average readers (as rated by their teachers). Of the five students scoring 75 or below (-3 SD) on the CSAB, 80 percent were rated as "Poor" readers. One student in this category (representing 20 percent) was considered an average reader by the teacher. Fifty-two percent of the students scoring 85 to 101 (±1 SD) on the CSAB received "Poor" or "Below Average" teacher ratings. This percentage is identical to the counterpart cells of CTBS scores on Table 4. If a student received a CSAB score between 102 and 110 (+2 SD) the probability of the student's reading achievement being rated as "Average," "Above Average," or "High" by the teacher was 96 out of 100. These data support consideration of a lower or higher CSAB cutoff score, depending on the use which is to be made of the information.

Product-Moment Correlations

Following initial examination of the data, product-moment correlations were computed to examine whether the CSAB and measures of reading achievement yielded essentially the same results - - the same students scored high or low on both the CSAB and a reading achievement measure.

Intercorrelations of CSAB Total, CTBS Total Reading, and Teacher Rating and correlations of these three with age, sex and race are provided in Table 7.[1] The highest correlation obtained (r=.88) was between CTBS Total Reading and Teacher Rating. Correlations of CSAB with CTBS Total Reading (r=.63) and with Teacher Rating (r=.67) were not as strong. However, all three correlations

[1]Although this study centered on the relationship of the CSAB to reading achievement, the correlation of CSAB Total to CTBS Total Mathematics was computed. That correlation was .63.

Table 7

Intercorrelations of CSAB Total, CTBS Total Reading and Teacher Rating with Age, Sex, and Race

Variables	CSAB Total	CTBS Total Reading	Teacher Rating
CSAB Total	--	.63**	.67**
CTBS Total Reading	--	--	.88**
Age	.14	.11	.17*
Sex	.15	.20*	.19*
Race	.50**	.34**	.41**

*Significant at .05 level.

**Significant at .01 level.

were significant at the .01 level. The correlation between CSAB Total and CTBS Total Reading must be interpreted with two considerations in mind. First, according to Harris & Sipay (1975), although a correlation of this size (.63) is substantial and will allow prediction of the rate of progress for a group, it is inadequate for providing accurate predictions for individual children. Second, discussions in the literature of the adequacies of correlations refer to a fall administration of the readiness test and a spring administration of the reading achievement test. For this study, the two tests were administered within a thirty-day period. Therefore, correlations obtained are not indicative of predictive value of the CSAB, they are indicative of the extent to which the CSAB provides a measure of variables related to current reading achievement. Viewed in this light, a correlation of .63 must be considered inadequate for making predictions or planning instructional programs for individual children in the sample group. Similar comments would be applicable to the .67 correlation between the CSAB Total Score and Teacher Rating,

a second index of reading achievement. All other correlations obtained in this study should be interpreted with the close proximity of test administration in mind.

Since developers of the CSAB cautioned that student performance in some areas of the test might improve as a result of general development rather than instruction, age was considered a possible variable. Age was not significantly correlated with either the CSAB or CTBS. Although the correlation between age and teacher rating (r=.17) was significant at the .05 level, the relationship is minimal. Statistically significant correlations of less than .30 obtained in this study were considered too weak to warrant discussion.[1] The correlation between CSAB and race (r=.50) directs attention to a possible cultural bias in the CSAB, especially since the correlation between race and reading achievement as measured by the CTBS was only .34. There was a moderate degree of relationship between race and teacher rating (r=.41).

The degree of correspondence between CSAB Total Score and CTBS Reading Subtest Scores is given in Table 8. The relationship of each of the four

Table 8

Coefficients of Correlations between CTBS Reading Subtests and CSAB Total

CTBS Reading Subtests	CSAB Total
Letter Sounds	.61**
Word Recognition I	.57**
Comprehension	.56**
Word Recognition II	.56**

**Significant at .01 level.

[1] "It has been said that it is inappropriate to bother with r's of .10, .20, and .30. With r's of about .10 or less, this point is well taken, but with r's of about .30, it is not. If an r of .30 is statistically significant, it may help the investigator later to find an important relation-- if he can clear up, say his measurement problems." (Kerlinger, 1973, p. 201)

reading subtests with CSAB Total Score was significant at the .01 level. There was little variation among the four correlations which ranged from .56 to .61. These correlations are not strong enough to support the use of the CSAB either for categorizing students as "Ready" or "Not Ready," or for diagnosing strengths and deficiencies in pre-reading skills.

Correlations of CSAB Items with CTBS Reading Subtest Scores and Total Reading Scores

To analyze the correlations of individual CSAB items with CTBS reading subtest scores and total reading scores, the twenty categories on the CSAB were grouped under the five competency areas designated in the CSAB Teachers Manual.

I. ORIENTATION TOWARD AND FAMILIARITY WITH ONE'S ENVIRONMENT
   - A. Basic Information
   - B. Identification of Body Parts
   - C. Response During Assessment

II. COORDINATION
   - A. Large Muscle Coordination
   - B. Visual-Motor Coordination, Copying

III. DISCRIMINATION
   - A. Color Identification
   - B. Shape Identification
   - C. Symbol and Letter Discrimination
   - D. Visual-Auditory Discrimination
   - E. Auditory Discrimination

IV. MEMORY
   - A. Auditory Memory--Meaningful Words
   - B. Auditory Memory--Sentence Recall
   - C. Visual Memory

V. COMPREHENSION AND CONCEPT FORMATION
   - A. Number Knowledge
   - B. Letter Naming
   - C. Vocabulary
   - D. Information from Pictures
   - E. Picture Comprehension
   - F. Story Comprehension
   - G. Multiple Directions

Tables providing correlations of CTBS Reading Subtests and Total Reading with

individual items on the CSAB are included as Appendix B. Although Response During Assessment was not a part of the total CSAB score, it was included in this analysis for two reasons. First, the developers of the CSAB included Response During Assessment within Competency Area I, ORIENTATION TOWARD AND FAMILIARITY WITH ONE'S ENVIRONMENT. Second, teachers in the statewide study reported that they gained a better understanding of students in their classes as they administered the CSAB and as they made special note of items listed under Response During Assessment.

Thirty-one items (including four in Response During Assessment) were significantly related to CTBS Total Reading. Only fourteen of the thirty-one items had a .30 correlation or higher. Two of the fourteen were in the Response During Assessment category: "Attention Span" (r=.36) and "Comprehension of Directions" (r=.38). One other item in Category I ("Birthdate", under Basic Information) had a correlation .30 or higher (r=.32). The latter correlation reinforces warnings of statisticians that correlation does not mean causation. It is inconceivable that providing a student instruction in his date of birth (month, day, year) would result in increased reading skill development.

No item had an r of .30 or higher with Total Reading in Competency Area II (COORDINATION). In Area III (DISCRIMINATION), there was only one item with an r of that magnitude--auditory discrimination of final sounds, and in Area IV, two items--auditory memory of words (r=.39) and auditory memory of a sentence (r=.36). The remaining eight items were in Competency Area IV (COMPREHENSION AND CONCEPT FORMATION): three in Number Knowledge (.31, .34, .35), and five in Vocabulary (.35, .36, .37, .39, .46).

All correlations described above were in the low to moderate range. In all other categories, negligible correlations were obtained: "Identification of Body Parts," "Large Muscle Coordination," "Visual-Motor Coordination," "Color Identification," "Shape Identification," "Symbol and Letter Discrimination," "Visual-Auditory Discrimination," "Visual Memory," "Letter Naming,"

"Information from Pictures," "Picture Comprehension," "Story Comprehension," and "Multiple Directions."

Conclusions

According to findings of this study, the Cognitive Skills Assessment Battery does not appear to provide adequate diagnostic information for diagnostic/instructional decisions in first grade.

1. Mean scores obtained on the CSAB distinguished more between black and white students than between students just beginning first grade and students completing first grade.
2. The cutoff score of 88 did not adequately distinguish between "Ready" and "Not Ready" students. Almost one-third of the students who failed to attain the cut-off score of 88 on the CSAB scored average or above in reading on the Comprehensive Test of Basic Skills, almost one-fourth were rated as average or above average readers by their teachers. Conversely, approximately forty percent of the students who did attain (or exceed) the cutoff score of 88 were below average readers on the CTBS and according to ratings by their teachers.
3. Items on the CSAB did not appear to be representative of necessary pre-reading skills. Less than one-half of the items were answered correctly by at least ninety percent of the students completing first grade. More than one-sixth of the items were not answered correctly by even fifty percent of the students.
4. Correlations between the CSAB (total score and individual items) and the CTBS (Total Reading and Reading Subtests) were not strong enough to warrant the use of the CSAB to classify a student, to diagnose deficiencies, or to plan individual instructional programs.
5. The correlation between CSAB scores and race raised a question of possible cultural bias in the CSAB.

No attempt was made in this study to obtain a random sample of first grade students. Therefore, no generalizations for the population of first grade students in South Carolina are made on the basis of these findings. However, the students in the two schools studied are being, and will be, classified according to their scores on the Cognitive Skills Assessment Battery. It is primarily for this reason that the following recommendations are offered.

1. The present practice of categorizing students as "Ready" or "Not Ready" solely on the basis of a single test score should be discontinued. The literature is consistent in condemning this practice no matter which test is used. The findings of this study confirm that, for this sample, students should not be classified according to a cutoff score of 88 on the CSAB.
2. If the CSAB is to be used for initial screening of first grade students, the purpose of the screening should be clarified. If the intent is to identify all students who possibly may have difficulty with reading skill development, then a higher cutoff score should be considered. If, on the other hand, the intent is to identify only those students who will have difficulty with reading, then a lower cutoff score will be needed. Even under these conditions, further diagnosis must be undertaken before students are categorized and before individual instructional programs are planned.
3. A much more extensive statewide study should be undertaken to examine both the predictive and concurrent validity of the CSAB, and to establish a more realistic cutoff score.

It is recognized that the South Carolina State Department of Education has been gathering, and will continue to gather, data on the CSAB using far more sophisticated research techniques than those used in this study. In addition, the State Department has made modifications to minimize ambiguities in administering and scoring the CSAB. The findings reported in this paper reaffirm the need for those activities. Hillerich stresses that "it is not the task of educators... to predict reading failure; the task is to prevent that failure." (1977, p. 44) This was the intent of the Basic Skills Assessment Act, and it must remain a primary goal for educators attempting to implement the act.

APPENDIX A

Percentage of Partial and Complete Responses to CSAB Items

Appendix A

Percent of Partial and Complete Responses
to CSAB Items

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
BASIC INFORMATION					
1. Name					
(0) Unable	--	--	--	--	--
(1) Part	--	--	--	--	--
(2) First	31.8%	29.3%	33.8%	31.6%	31.9%
(3) Whole	68.2%	70.7%	66.2%	68.4%	68.1%
2. Address					
(0) Unable	34.9%	29.3%	39.4%	42.1%	29.2%
(1) Street	42.6%	44.8%	40.8%	49.1%	37.5%
(2) Street & number	22.5%	25.9%	19.7%	8.8%	33.3%
3. Birthdate					
(0) Unable	38%	32.8%	42.3%	40.4%	36.1%
(1) Month	14.7%	15.5%	14.1%	15.8%	13.9%
(2) Date	47.3%	51.7%	43.7%	43.9%	50.0%
4. Telephone					
(0) Unable	36.4%	25.9%	45.1%	43.9%	30.6%
(1) Able	63.6%	74.1%	54.9%	56.1%	69.4%
IDENTIFICATION OF BODY PARTS					
5. Boy/girl					
(0) Unable	--	--	--	--	--
(1) Point	--	--	--	--	--
(2) Name	100%	100%	100%	100%	100%
6. Arm					
(0) Unable	.8%	--	1.4%	--	--
(1) Point	.8%	1.7%	--	1.8%	1.4%
(2) Name	98.5%	98.3%	98.6%	98.2%	98.6%
7. Leg					
(0) Unable	.8%	1.7%	--	1.8%	1.4%
(1) Point	--	--	--	--	--
(2) Name	99.2%	98.3%	100%	98.2%	100%
8. Neck					
(0) Unable	5.4%	6.9%	4.2%	5.3%	5.6%
(1) Point	3.9%	6.9%	1.4%	7.0%	1.4%
(2) Name	90.%	86.2%	94.4%	87.7%	93.1%

Appendix A (continued)

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
COLOR IDENTIFICATION					
9. Blue					
(0) Unable	.8%	--	1.4%	--	1.4%
(1) Point	3.9%	5.2%	2.8%	3.5%	4.2%
(2) Name	95.4%	94.8%	95.8%	96.5%	94.4%
10. Brown					
(0) Unable	3.1%	1.7%	4.2%	3.5%	2.8%
(1) Point	5.4%	8.6%	2.8%	7.0%	4.2%
(2) Name	91.5%	89.7%	93.0%	89.5%	93.1%
11. Red					
(0) Unable	1.6%	3.4%	--	1.8%	1.4%
(1) Point	1.6%	1.7%	1.4%	3.5%	
(2) Name	96.9%	94.8%	98.6%	94.7%	98.6%
SHAPE IDENTIFICATION					
12. Circle					
(0) Unable	25.6%	27.6%	23.9%	36.8%	16.7%
(1) Point	23.3%	20.7%	25.4%	22.8%	23.6%
(2) Name	51.2%	51.7%	50.7%	40.4%	59.7%
13. Square					
(0) Unable	10.9%	19.0%	4.2%	21.1%	2.8%
(1) Point	15.5%	17.2%	14.1%	12.3%	18.1%
(2) Name	73.6%	63.8%	81.7%	66.7%	79.2%
14. Triangle					
(0) Unable	16.3%	13.8%	18.3%	22.8%	11.1%
(1) Point	15.5%	13.8%	16.9%	14.0%	16.7%
(2) Name	68.2%	72.4%	64.8%	63.2%	72.2%
15. Rectangle					
(0) Unable	--	--	--	--	--
(1) Point	1.6%	3.4%	--	1.8%	1.4%
(2) Name	98.5%	96.6%	100%	98.2%	98.6%

Appendix A (continued)

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
NUMBER KNOWLEDGE					
16. 3 blocks					
(0) Unable	--	--	--	--	--
(1) Selects number	.8%	1.7%	--	1.8%	--
(2) Counts	99.2%	98.3%	100%	98.2%	100%
17. 5 blocks					
(0) Unable	.8%	--	1.4%	--	1.4%
(1) Selects number	10.1%	13.8%	7.0%	15.8%	5.6%
(2) Counts	89.1%	86.2%	91.5%	84.2%	93.1%
18. 7 blocks					
(0) Unable	3.9%	5.2%	2.8%	3.5%	4.2%
(1) Selects number	17.1%	15.5%	18.3%	26.3%	9.7%
(2) Counts	79.1%	79.3%	78.9%	70.2%	86.1%
19. 4 rabbits					
(0) Unable	2.3%	1.7%	2.8%	5.3%	--
(1) Counts out	12.4%	12.1%	12.7%	14.0%	11.1%
(2) Correct	85.3%	86.2%	84.5%	80.7%	88.9%
20. 6 balloons					
(0) Unable	12.4%	13.8%	11.3%	14.0%	11.1%
(1) Counts out	27.9%	25.9%	29.6%	43.9%	15.3%
(2) Correct	59.7%	60.3%	59.2%	42.1%	73.6%
21. 8 flowers					
(0) Unable	18.6%	12.1%	23.9%	21.1%	16.7%
(1) Counts out	25.6%	25.9%	25.4%	33.3%	19.4%
(2) Correct	55.8%	62.1%	50.7%	45.6%	63.9%
22. Symbol 3					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
23. 9 apples					
(0) Unable	20.2%	25.9%	15.5%	29.8%	12.5%
(1) Able	79.8%	74.1%	84.5%	70.2%	87.5%
24. Add 2+5					
(0) Unable	7.8%	8.6%	7.0%	10.5%	5.6%
(1) Able	92.2%	91.4%	93.0%	89.5%	94.4%

Appendix A (continued)

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
INFORMATION FROM PICTURES					
25. Sitting - ball					
(0) Unable	11.6%	10.3%	12.7%	12.3%	11.1%
(1) Partial	77.5%	79.3%	76.1%	82.5%	73.6%
(2) Complete	10.9%	10.3%	11.3%	5.3%	15.3%
26. Painting					
(0) Unable					
(1) Partial	85.3%	87.9%	83.1%	82.5%	87.5%
(2) Complete	14.7%	12.1%	16.9%	17.5%	12.5%
27. Swinging					
(0) Unable	2.3%	3.4%	1.4%	5.3%	--
(1) Partial	34.9%	31.0%	38.0%	43.9%	27.8%
(2) Complete	62.8%	65.5%	60.6%	50.9%	72.2%
28. Blocks					
(0) Unable	7.0%	5.2%	8.5%	8.8%	5.6%
(1) Partial	27.1%	19.0%	33.8%	35.1%	20.8%
(2) Complete	65.9%	75.9%	57.7%	56.1%	73.6%
PICTURE COMPREHENSION					
29. Rains					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
30. Ride in					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
31. Holds together					
(0) Unable	6.2%	6.9%	5.6%	12.3%	1.4%
(1) Able	93.8%	93.1%	94.4%	87.7%	98.6%

Appendix A (continued)

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
STORY COMPREHENSION					
32. Dog did					
(0) Unable	11.6%	8.6%	14.1%	14.0%	9.7%
(1) Able	88.4%	91.4%	85.9%	86.0%	90.3%
33. Jean put on last					
(0) Unable	26.4%	22.4%	29.6%	36.8%	18.1%
(1) Able	73.6%	77.6%	70.4%	63.2%	81.9%
34. Jean didn't wear					
(0) Unable	18.7%	17.2%	19.7%	26.3%	12.5%
(1) Able	81.4%	82.8%	80.3%	73.7%	87.5%
35. Joe - end of story					
(0) Unable	10.9%	13.8%	8.5%	15.8%	6.9%
(1) Able	89.1%	86.2%	91.6%	84.2%	93.1%
36. Joe gave kitten					
(0) Unable	47.3%	58.6%	38.0%	59.6%	37.5%
(1) Able	52.7%	41.4%	62.0%	40.4%	62.5%
MULTIPLE DIRECTIONS					
37. Ball and doll					
(0) Unable	3.1%		5.6%	1.8%	4.2%
(1) Able	96.9%	100%	94.4%	98.2%	95.8%
38. Tall and red					
(0) Unable	20.9%	15.5%	25.4%	24.6%	18.1%
(1) Able	79.1%	84.5%	74.6%	75.4%	81.9%
39. Dog - box, doll - chair					
(0) Unable	16.3%	15.5%	16.9%	22.8%	11.1%
(1) Able	83.7%	84.5%	83.1%	77.2%	88.9%

Appendix A (continued)

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
LARGE MUSCLE COORDINATION					
40. Jump					
(0) Unable	.8%	--	1.4%	1.8%	--
(1) Difficulty	7.0%	8.6%	5.6%	10.5%	4.2%
(2) Ease	92.2%	91.4%	93.0%	87.7%	95.8%
41. Hop					
(0) Unable	.8%	--	1.4%	--	1.4%
(1) Difficulty	5.4%	3.4%	7.0%	5.3%	5.6%
(2) Ease	93.8%	96.6%	91.5%	94.7%	93.1%
42. Skip					
(0) Unable	25.6%	15.5%	33.8%	19.3%	30.6%
(1) Difficulty	14.7%	17.2%	12.7%	17.5%	12.5%
(2) Ease	59.7%	67.2%	53.5%	63.2%	56.9%
AUDITORY MEMORY					
43. Cow - Pie - Bed					
(0) None	19.4%	10.3%	26.8%	26.3%	13.9%
(1) One word	14.7%	17.2%	12.7%	21.1%	9.7%
(2) Two words	45.7%	48.3%	43.7%	45.6%	45.8%
(3) Correct	20.2%	24.1%	16.9%	7.0%	30.6%

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
VISUAL - MOTOR COORDINATION					
44. Circle					
(0) Unable	.8%	--	1.4%	--	1.4%
(1) Able	99.2%	100%	98.6%	100%	98.6%
45. Square					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
46. Triangle					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
47. N					
(0) Unable	1.6%	--	2.8%	1.8%	1.4%
(1) Able	98.5%	100%	97.2%	98.2%	98.6%
48. R					
(0) Unable	.8%	1.7%	--	1.8%	--
(1) Able	99.2%	98.3%	100%	98.2%	100%
49. Cross					
(0) Unable	7.8%	6.9%	8.5%	12.3%	4.2%
(1) Able	92.2%	93.1%	91.5%	87.7%	95.8%
SENTENCE RECALL					
50. The boy played ball					
(0) Unable	26.4%	19.0%	32.4%	38.6%	16.7%
(1) Partial	22.5%	20.7%	23.9%	24.6%	20.8%
(2) Correct	51.2%	60.3%	43.7%	36.8%	62.5%

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
VOCABULARY					
51. Apple					
(0) Unable	3.9%	3.4%	4.2%	7.0%	1.4%
(1) Demonstration/Concrete	10.9%	10.3%	11.3%	14.0%	8.3%
(2) Functional/Abstract	85.3%	86.2%	84.5%	78.9%	90.3%
52. Rain					
(0) Unable	22.5%	22.4%	22.5%	31.6%	15.3%
(1) Demonstration/Concrete	41.9%	31.0%	50.7%	47.4%	37.5%
(2) Functional/Abstract	35.7%	46.6%	26.8%	21.1%	47.2%
53. Elbow					
(0) Unable	25.6%	19.0%	31.0%	36.8%	16.7%
(1) Demonstration/Concrete	54.3%	53.4%	54.9%	56.1%	52.8%
(2) Functional/Abstract	20.2%	27.6%	14.1%	7.0%	30.6%
54. Whisper					
(0) Unable	37.2%	38.0%	36.6%	57.9%	20.8%
(1) Demonstration/Concrete	14.7%	12.1%	16.9%	15.8%	13.9%
(2) Functional/Abstract	48.1%	50.0%	46.5%	26.3%	65.3%
55. Chase					
(0) Unable	51.9%	41.4%	60.6%	59.6%	45.8%
(1) Demonstration/Concrete	24.0%	25.9%	22.5%	26.3%	22.2%
(2) Functional/Abstract	24.0%	32.8%	16.9%	14.0%	31.9%
56. Injure					
(0) Unable	81.4%	82.8%	80.3%	98.2%	68.1%
(1) Demonstration/Concrete	3.1%	3.4%	2.8%	--	5.6%
(2) Functional/Abstract	15.5%	13.8%	16.9%	1.8%	26.4%
57. VISUAL MEMORY					
(0) Unable					
(1) Remembered 1	11.6%	6.9%	15.5%	14.0%	9.7%
(2) Remembered 2	38.8%	39.7%	38.0%	31.6%	44.4%
(3) Remembered 3	31.8%	34.5%	29.6%	35.1%	29.2%
(4) Remembered 4	14.7%	13.8%	15.5%	12.3%	16.7%
(5) Remembered 5	3.1%	5.2%	1.4%	7.0%	--
(6) Remembered 6	--	--	--	--	--

Appendix A (continued)

	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
SYMBOL DISCRIMINATION					
58. Leaf					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
59. Circle in square					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
60. Hand					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
61. A					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
62. W					
(0) Unable	1.6%	3.4%	--	1.8%	1.4%
(1) Able	98.5%	96.6%	100%	98.2%	98.6%
63. e					
(0) Unable	.8%	--	1.4%	--	1.4%
(1) Able	99.2%	100%	98.6%	100%	98.6%
64. d					
(0) Unable	24.0%	25.9%	22.5%	24.6%	23.6%
(1) Able	76.0%	74.1%	77.5%	75.4%	76.4%
65. n					
(0) Unable	3.9%	6.9%	1.4%	7.0%	1.4%
(1) Able	96.1%	93.1%	98.6%	93.0%	98.6%
LETTER NAMING					
66. B					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
67. g					
(0) Unable	4.7%	3.4%	5.6%	5.3%	4.2%
(1) Able	95.3%	96.6%	94.4%	94.7%	95.8%

Appendix A (continued)

CSAB Items	Percent of Responses				
	Total (N=129)	Girls (N=58)	Boys (N=71)	Black (N=57)	White (N=72)
VISUAL - AUDITORY DISCRIMINATION					
Initial					
68. Coat					
(0) Unable	.8%	1.7%	--	1.8%	--
(1) Able	99.2%	98.3%	100%	98.2%	100%
69. Sun					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
Ending					
70. Lamp					
(0) Unable	14.7%	13.8%	15.5%	24.6%	6.9%
(1) Able	85.3%	86.2%	84.5%	75.4%	93.1%
Medial					
71. House					
(0) Unable	--	--	--	--	--
(1) Able	100%	100%	100%	100%	100%
AUDITORY DISCRIMINATION					
72. Flower - Flower					
(0)Unable	3.9%	1.7%	5.6%	1.8%	5.6%
(1)Able	96.1%	98.3%	94.4%	98.2%	94.4%
73. Hand - Sand					
(0)Unable	17.1%	15.5%	18.3%	24.6%	11.1%
(1)Able	82.9%	84.5%	81.7%	74.5%	88.9%
74. Wreath - Wreath					
(0)Unable	1.6%	--	2.8%	--	2.8%
(1)Able	98.5%	100%	97.2%	100%	97.2%
75. Pet - Pit					
(0)Unable	29.5%	27.6%	31.0%	40.4%	20.8%
(1)Able	70.5%	72.4%	69.0%	59.6%	79.2%
76. Kart - Karp					
(0)Unable	43.4%	36.2%	49.3%	57.9%	31.9%
(1)Able	56.6%	63.8%	50.7%	42.1%	68.1%

APPENDIX B

Correlations between CSAB Items and
CTBS Reading (Subtests and Total)

COMPETENCY AREA I: ORIENTATION TOWARD AND FAMILIARITY WITH ONE'S ENVIRONMENT

Correlations of CSAB Basic Information and Body Parts Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
BASIC INFORMATION					
Name	.23**	.25**	.15	.17	.22**
Address	.11	.10	.16	.17	.13
Birthdate	.33**	.29**	.29**	.28**	.32**
Telephone	.25**	.21*	.23**	.15	.21**
IDENTIFICATION OF BODY PARTS					
Boy/girl[a]	.00	.00	.00	.00	.00
Arm	-.15	-.11	-.12	-.11	-.12
Leg	-.11	-.08	-.04	-.08	-.07
Neck	.04	.07	.05	.11	.06

*Significant at .05 level.

**Significant at .01 level.

[a]No correlation since all students answered the item correctly.

COMPETENCY AREA I (CONTINUED)

Correlations of CSAB Response during Assessment with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
RESPONSE DURING ASSESSMENT					
Task Persistence	.16	.17	.05	.16	.15
Attention Span	.38**	.35**	.30**	.29**	.36**
Body Movement	.23**	.24**	.19*	.18*	.22**
Attention to Directions	.25**	.18*	.14	.16	.21
Comprehension of Directions	.40**	.31**	.33**	.31**	.38**
Verbalizations	.15	.09	.09	.07	.13
Rapport	.16	.11	.10	.13	.14
Confidence	.18*	.24**	.12	.19*	.20*

*Significant at .05 level.

**Significant at .01 level.

COMPETENCY AREA II: COORDINATION

Correlations of CSAB Large Muscle Coordination and Visual-Motor Coordination Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
LARGE MUSCLE COORDINATION					
Jump	-.03	.04	.01	-.02	-.01
Hop	-.01	.01	-.02	-.01	-.01
Skip	-.06	-.07	.03	.01	-.01
VISUAL-MOTOR COORDINATION					
Circle	.11	.06	.07	.04	.06
Square[a]	.00	.00	.00	.00	.00
Triangle[a]	.00	.00	.00	.00	.00
N	-.12	-.04	-.01	-.04	-.05
R	-.09	-.15	-.02	-.12	-.07
Cross	.32**	.18*	.21**	.24**	.26**

*Significant at .05 level.

**Significant at .01 level.

[a]No correlation -- all students answered the item correctly.

COMPETENCY AREA III: DISCRIMINATION

Correlations of CSAB Color Identification and Shape Identification Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
COLOR IDENTIFICATION					
Blue	-.15	-.11	-.11	-.13	-.14
Brown	.20*	.19*	.14	.20*	.21*
Red	-.02	-.02	.01	.04	-.01
SHAPE IDENTIFICATION					
Rectangle	.13	.10	.11	.09	.12
Square	.08	.05	.05	.06	.07
Triangle	.10	.17	.21*	.13	.14
Circle	.08	.13	.13	-.00	.10

*Significant at .05 level.

**Significant at .01 level.

Correlations of CSAB Symbol and Letter Discrimination Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
SYMBOL AND LETTER DISCRIMINATION					
Leaf[a]	.00	.00	.00	.00	.00
Circle in square[a]	.00	.00	.00	.00	.00
Hand[a]	.00	.00	.00	.00	.00
A[a]	.00	.00	.00	.00	.00
w	.10	.13	.13	.15	.14
e	.09	.09	.00	.04	.06
d	.10	.18*	.18*	.17	.15
n	.16	.14	.00	.15	.12

*Significant at .05 level.

**Significant at .01 level.

[a]No correlation since all students answered the item correctly.

Correlations of CSAB Visual-Auditory Discrimination and Auditory Discrimination Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn	Compr	Word Regn II	Total Reading
VISUAL-AUDITORY DISCRIMINATION					
Initial Coat	-.11	-.08	-.16	-.16	-.14
Sun[a]	.00	.00	.00	.00	.00
Ending Lamp	.26**	.13	.14	.24**	.21*
Medial House[a]	.00	.00	.00	.00	.00
AUDITORY DISCRIMINATION					
Flower-Flower	.07	.11	.02	.07	.08
Hand-Sand	.10	.06	.09	.06	.07
Wreath-Wreath	-.04	-.01	-.06	-.05	-.05
Pet-Pit	.22**	.26**	.24**	.25**	.27**
Kart-Karp	.39**	.41**	.40**	.33**	.42**

*Significant at .05 level.

**Significant at .01 level.

COMPETENCY AREA IV: MEMORY

Correlations of CSAB Auditory Memory-Words, Auditory Memory-Sentences and Visual Memory Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
AUDITORY MEMORY-Words	.35**	.40**	.32**	.36**	.39**
AUDITORY Memory-Sentence (SENTENCE RECALL)	.28**	.34**	.34**	.37**	.36**
VISUAL MEMORY	-.14	-.09	-.06	-.14	-.10

*Significant at .05 level.

**Significant at .01 level.

COMPETENCY AREA V: COMPREHENSION AND CONCEPT FORMATION

Correlations of CSAB Number Knowledge Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
NUMBER KNOWLEDGE					
3 blocks	.17	.21*	.17*	.12	.21*
5 blocks	.25**	.17	.21*	.24**	.24**
7 blocks	.25**	.26**	.25**	.23**	.27**
4 rabbits	.32**	.28**	.33**	.37**	.35**
6 ballons	.30**	.27**	.30**	.23**	.31**
8 flowers	.31**	.33**	.30**	.29**	.34**
Symbol 3[a]	.00	.00	.00	.00	.00
9 apples	.09	.10	.07	.04	.10
Add 2+5	.11	.04	.11	.13	.11

*Signficant at .05 level.

**Signficant at .01 level.

[a]No correlation since all students answered the item correctly.

Correlations of CSAB Letter Naming and Vocabulary Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
LETTER NAMING					
B[a]	.00	.00	.00	.00	.00
g	.29**	.27**	.14	.23**	.26**
VOCABULARY					
Apple	.13	.10	.18*	.12	.15
Rain	.38**	.32**	.30**	.32**	.35**
Elbow	.36**	.35**	.33**	.30**	.36**
Whisper	.51**	.40**	.35**	.42**	.46**
Chase	.40**	.32**	.35**	.34**	.39**
Injure	.40**	.29**	.35**	.33**	.37**

*Significant at .05 level.

**Significant at .01 level.

[a]No correlation since all students answered this item correctly.

Correlations of CSAB Information from Picture and Picture Comprehension Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
INFORMATION FROM PICTURES					
Sitting-ball	.21*	.26**	.20*	.23**	.23**
Painting	-.08	-.15	-.10	-.06	-.11
Swinging	.16	.14	.12	.13	.14
Blocks	.30**	.25**	.29**	.25**	.29**
PICTURE COMPREHENSION					
Rains[a]	.00	.00	.00	.00	.00
Ride in[a]	.00	.00	.00	.00	.00
Holds together	.12	.17*	.10	.12	.14

*Significant at .05 level.

**Significant at .01 level.

[a]No correlation since all students answered this item correctly.

Correlations of CSAB Story Comprehension and Multiple Directions Item Responses with CTBS Reading Subtest Scores and Total Reading Score

Cognitive Skills Assessment Battery	Comprehensive Test of Basic Skills Subtests				
	Letr Sounds	Word Regn I	Compr	Word Regn II	Total Reading
STORY COMPREHENSION					
Dog did	.20*	.12	.19*	.24**	.19*
Jean put on last	.00	-.02	.04	-.02	.01
Jean didn't wear	.13	.16	.07	.16	.13
Joe-end of story	.05	.01	.01	.03	.03
Joe gave kitten	.23**	.17*	.08	.17	.16
MULTIPLE DIRECTIONS					
Ball and doll	.18*	.18*	.17	.17	.19*
Tall and red	.23**	.22**	.14	.22**	.21*
Dog-box, doll-chair	.15	.14	.21*	.09	.16

*Significant at .05 level.

**Significant at .01 level.

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